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On Terms

Behavioral Biology

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Although the experimental analysis of behavior was born and nutured, and has matured, in departments of psychology, the relationship between the two has been a troubled one, given the fundamental conflicts behavioral psychologists have had with their cognitively-oriented siblings. Moreover, the efforts of conciliators to make peace by defining psychology as the science of behavior *and* mental life have not resolved the problems and imply for many an insufferable dualism. The "psy-" and "psycho-" combining forms have been seen by the behaviorists as simply inappropriate.

Some behavior analysts have advocated that we shake off embarrassing family customs and beliefs by leaving home entirely and changing our name. Epstein's (1985) recent proposal that the scientific study of behavior be known as "praxics" and that it ultimately have its own department within universities exemplifies the recurring quest by behavioral psychologists to find a name and a place that suits them. In some instances, behavioral psychologists have married into disciplines where they have been able to go by new names that better characterize the focus of their interests (e.g., behavioral pharmacology, behavioral toxicology, behavioral medicine, etc.).

The term "behavioral biology" has sometimes been chosen in a deliberate effort to eschew the "psy-" and "psycho-" combining forms and thereby the terminology of mentalism, that is, to embrace in word, as well as in deed, the focus on and the commitment to an understanding of behavior for its own sake. The naming of the Division of Behavioral Biology at the Johns Hopkins School of Medicine represented just such an effort. In 1968, when Joseph Brady joined the faculty of the Department of Psychiatry at Johns Hopkins, the title typically given to nonpsychiatrists was "Professor of Psychobiology." Refusing to accept a mentalistic appellation, Brady declined the "Psycho-" and suggested that the title be changed to "Professor of Behavioral Biology." Shortly thereafter, the "Division of Behavioral Biology" within the department was founded. Over the years, Brady has often strongly advocated widespread adoption of this term as a substitute for "psychology" or "psychobiology."[1]

Although the term "behavioral biology" may be increasingly advocated by behavior analysts, it was neither originally coined nor predominantly used by them. In biology, the term has been used to denote the integration of information about structure, function, and life cycle of a species in order to characterize and give meaning to the behaviors of that species, as in *The Behavioral Biology of Aplysia* (Kandel, 1979). More generally,

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[1] In an interview in the APA *Monitor* (Aug/Sept, 1981), Brady expressed frustration with the problems behavior analysts have in being taken seriously by members of the "hard sciences" by being called "psychologists," and went on to make the analogy that "Psychology is to the experimental analysis of behavior what astrology is to astronomy" (p. 71). In a speech before APA Division 25 for the Experimental Analysis of Behavior at the meetings of the American Psychological Association that same year, Brady advocated that behavior analysts dissociate themselves from psychology departments altogether.

however, the term has been employed as a rubric to encompass a diverse set of topics or interdisciplinary enterprises in which behavior analysts may or may not participate. A unifying principle in these situations seems to be that the topics can be considered to relate to an understanding of the overall functioning of organisms. For example, a series of symposium-derived books is published as *Advances in Behavioral Biology.* The series has a clearly interdisciplinary orientation and incorporates in its current 26 volumes such titles as *Conditioning: Representation of Involved Neural Functions* (1982), *The Aging Brain and Senile Dementia* (1977), and *Cocaine and Other Stimulants* (1977).

In a similar integrative spirit, "behavioral biology" names an interdepartmental, interdivisional undergraduate major at The Johns Hopkins University. The course of study includes offerings in both the natural and social sciences from the Schools of Arts and Sciences, Medicine, and Hygiene and Public Health. "Experimental Analysis of Behavior" is one of the required courses. The program is geared toward "understanding the relationship between human behavior and biology" with recognition of the fact that "biology influences behavior" and "behavior also influences biology." Although Johns Hopkins was at one time the home of John B. Watson, neither "behaviorism" nor the experimental analysis of behavior can be said to predominate on the undergraduate campus. Thus, the choice of terminology for the major represents a consensual choice for a diverse group of academics.

Epstein (1985) has written that "behavioral biology" is a name that refers to "attempts in biology to synthesize information from various disciplines—primarily psychology, anthropology, and various branches of biology—that have concerned themselves with the behavior of organisms . . ." (p. 115), and he mentioned the journal *Behavioral and Neural Biology* as a source of work in this area. In its current incarnation, the journal focuses on ". . . [publications] that contribute significantly to our understanding of the biological nature and neurobiological bases of behavior" (McGaugh, 1979). Originally, however, as *Communications in Behavioral Biology* the journal was less focussed on the "neuro" and the "biological," and had a broadly based advisory board, including such well-known behavior analysts as Peter Dews, James Appel, Joseph Brady, and Israel Goldiamond.[2]

It is easier to find examples, such as the ones given above, of the use of the term "behavioral biology" than to find a definition that seems currently appropriate. The term "psychobiology," for which "behavioral biology" has sometimes been interchanged, is defined as (1) "that branch of biology dealing with the interrelationship of the mental processes and the anatomy and physiology of the individual" and as (2) "psychology as investigated by biological methods" (*Webster's New World Dictionary,* Second College Edition, p. 1147). Neither of these definitions, however, appears to characterize accurately the term "behavioral biology." It is easy enough to substitute "of behavior" for "of mental processes," but calling an enterprise a *branch* of biology or a *branch* of psychology does not do justice to the interdisciplinary nature of many research enterprises currently encompassed under the rubric of "behavioral biology." Substituting "behavioral" for "psycho" not only deletes mentalistic overtones, but also brings in the connotation of the diversity of research that traditionally has been encompassed under this term.

On one hand, "behavioral biology" might merely be the name that those of us too old to be allowed to enter the promised land of "Praxics" can use in our remaining days (cf. Epstein, 1985, p. 117). On the other hand, "behavioral biology" has more usefulness than simply

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[2] The first editor of this journal in 1968 was Stephen A. Weinstein of the School of Hygiene at Johns Hopkins who is reported to have been inspired to choose the name *Communications in Behavioral Biology* by Brady's substitution of "Behavioral Biology" for "Psychobiology" in the name of the professorship (Brady, personal communication).

as a name for an enclave of behavior analysts fleeing from psychology. The enormous potential inherent in the conception of "behavioral biology" as an interdisciplinary research enterprise should not be overlooked. Even though behavioral psychologists may currently predominate in some Divisions of Behavioral Biology, other scientists who study behavior (e.g., pharmacologists, physicians, and ethologists) also are members of such divisions. The participation of a variety of scientists who might not otherwise come into contact with an experimental analysis of behavior, but who might gain from and contribute to such collaboration, may be encouraged by an apprehension of "behavioral biology" as a joining together of scientific interests, methods, and data with the common goal of an integrated understanding of the behavior of organisms. In fact, "behavioral biology" seems to be a term that serves well to encompass the marriage of physiology and behavioral psychology that Skinner (1974) wrote of in *About Behaviorism*:

> New instruments and methods will continue to be devised, and we shall eventually know much more about the *kinds* of physiological processes, chemical or electrical, which take place when a person behaves. The physiologist of the future will tell us all that can be known about what is happening inside the behaving organism. His account will be an important advance over a behavioral analysis, because the latter is necessarily "historical"—that is to say, it is confined to functional relations showing temporal gaps. Something is done today which affects the behavior of an organism tomorrow. No matter how clearly that fact can be established, a step is missing, and we must wait for the physiologist to supply it. He will be able to show how an organism is changed when exposed to contingencies of reinforcement and why the changed organism then behaves in a different way, possibly at a much later date. What he discovers cannot invalidate the laws of a science of behavior, but it will make the picture of human action more nearly complete." (p. 221)

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